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FERROELECTRIC THIN FILM ELEMENT, PIEZOELECTRIC  
ACTUATOR AND LIQUID DISCHARGE HEAD

BACKGROUND OF THE INVENTION

5 Field of the Invention

The present invention relates to a ferroelectric thin film element, and more particularly to an element in which a spontaneous polarization of a ferroelectric thin film is involved  
10 in an improvement in device characteristics, such as a non-volatile memory. The present invention also relates to a piezoelectric actuator utilizing a piezoelectric property of an epitaxial film and a liquid discharge head equipped with a piezoelectric  
15 actuator unit of a configuration including such a piezoelectric actuator.

Description of the Related Art

As a memory medium for a non-volatile memory and the like, there is recently desired a memory  
20 apparatus employing a ferroelectric thin film having a high performance (hereinafter called ferroelectric memory). For securing optimal device characteristics and reproducibility in the ferroelectric memory, the ferroelectric thin film is required to have a large  
25 spontaneous polarization (residual polarization), a

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